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(54) Title: A NEW POWERFUL COSMETIC OR PHARMACEUTICAL COMPOSITION (57) Abstract The present invention relates to an extract of animal pancreas for topical application to the skin or wound which is a new, powerful, multi-function, cosmetic or pharmaceutical composition. It has a function of moisturizing skin, a function of making skin a comfortable silky smooth feel, a function of accelerating wound healing, a function of skin cleansing, a function of peeling stratum corneum, a function of treating keratoses, a function of improving tissue cell metabolism, a function of promoting cell turnover, and a function of enhancing the quality of skin or scalp cells, etc. It can be formulated with cosmetically or pharmaceutically acceptable ingredients into varied products to satisfy some cosmetic or pharmaceutical needs. The present invention also describes a method of preparing the extract of animal pancreas.		

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Patent Application of

A New Powerful Cosmetic or Pharmaceutical Composition

Background-Field of Invention

The present invention relates to a crude extract (use extract for following) of animal pancreas, specifically to such extract which is used as a new, powerful, multi-function, cosmetic or pharmaceutical composition.

Background-Description of Prior Art

Pancreas has both endocrine and exocrine functions, and therefore, contains many biological active substances such as insulin, glucagon, somatostatin, pancreatic polypeptide, kallikrein, and pancreatin, etc. Certain active substances of animal pancreas have recently been used as cosmetic ingredients or ingredients of accelerating wound healing. So far, it includes kallikrein, pancreatin, and insulin.

Kallikrein is used as a vasodilator. It is reported to improve cell mitosis, wound healing and oxygen uptake, and protect from UV radiation (Natalia Michalun et al.).

Pancreatin contains several enzymes that give it proteolytic, amylolytic and lipolytic activity. Pancreatin is used as a raw material in biological exfoliant to help remove cells from corneum layer

(Natalia Michalun et al.).

Insulin is used as an ingredient of accelerating wound healing in Lindenbaum's formulations (U.S. Pat. No. 5461030 and 5591709).

But the effects of other substances of pancreas on skin and wound have not been known well. There is a possibility that they also are valuable substances in cosmetic and wound healing field. The extract of animal pancreas is a mixture; it contains many biologic active substances and other substances. Its effect on skin and wound has also not been understood yet. Perhaps, it is due to that the extract of pancreas contains many digestive enzymes such as trypsin, chymotrypsin, elastase, lipase, and phospholipase (Chandrasoma, Underwood, and Isselbacher). These enzymes are also called as pancreatin. They digest cruelly normal tissue cells and result in their necrosis and bleeding. For example, trypsin and chymotrypsin can cause necrosis and hemorrhage, elastase causes vascular injury and local hemorrhage, lipase and phospholipase cause respectively local fat necrosis, and cell membrane injury (Chandrasoma, and Isselbacher). Although peptide hormones, such as insulin and kallikrein, are beneficial to wound healing, their amounts in the extract are far less than that of digestive enzymes, because the most of pancreas tissue are to produce pancreatin (Underwood). Therefore, the anticipated effect of the extract on skin and wound should be harmful or can even be considered dangerous, even though the extract also contains insulin and kallikrein, because the damages of digestive enzymes to pancreas and peripancreatic tissues in pancreatitis is under this condition with insulin and kallikrein too (Chandrasoma, Underwood, and Isselbacher).

Objects and Advantages

However, present invention has prepared an extract of animal pancreas, and topically applied it to human skin and wound. Surprising is that this extract does not damage any normal tissue cells and wound. Instead, it helps wound healing, improves tissue cell metabolism, promotes cell turnover, enhances skin quality, moisturizes skin, cleanses skin and makes skin to have a silky smooth feeling. Although the extract peels part of stratum corneum, this effect is self-limited, and it does not digest all stratum corneum. In addition, it can also be used to treat many keratoses such as ichthyosis, psoriasis, seborrheic keratoses, acne, dandruff, callous skin, etc. All above beneficial effects are not anticipated, but they meet the requirement used as a multi-function, cosmetic and pharmaceutical composition.

Objects:

The objects of present invention is to provide a method of preparing the extract of animal pancreas; to use said extract to make a product of cosmetic or pharmaceutical for treating skin, scalp, wound or some other diseases; and to disclose new active compositions in said extract.

Advantages:

1. Have a powerful function to accelerate wound healing, for example when it is topically applied to skin, chap and crack disappear in a few days. However, present invention is different from Lindenbaum's references (U.S. Patents No. 5461030 and 5591709) because his references did not comprise kallikrein, and some other unknown compositions.
2. Have a powerful function to peel stratum corneum, but it only peels part of corneum, never peels all the stratum corneum, and never damages any normal skin cells, even though concentrated or purified extract is used. This advantage will make that it can be safely used in cosmetic and pharmaceutical field to substitute hydroxy acids for decreasing the sign of aging. Hydroxy acids have many side effects to skin. The peeling effect of present invention is probably attributed to pancreatin in the extract of pancreas. Michalun reference also recited that pancreatin had exfoliating effect on stratum corneum, but he did not disclose above peeling characteristic. Perhaps, it is the reason that pancreatin has not yet be used in house-using cosmetic and pharmaceutical products, because pancreatin has always been considered very harmful to tissue cells. In addition, its peeling function also is distinctive than Rawlings reference (U.S. Patent No. 5554366). Rawlings active composition is stratum corneum chymotrypsin-like enzyme, but the extract of the present invention does not comprise stratum corneum chymotrypsin-like enzyme.
3. Can be used to treat many keratoses such as ichthyosis, psoriasis, seborrheic keratoses, acne, dandruff, callous skin, etc, but does not damage normal tissue cells.
4. Make skin to have a very comfortable silky smooth feel. This feel can last several days. In addition, it provides a naturally healthy look and feel without tacky feel or greasy look for skin.
5. Have a cleansing function without irritation to skin while it plays a role in moisturizing skin. For example, use consistently it for several days, then the dirt firmly stuck in dactylogram and

pore can be washed out easily.

6. Improve tissue cell metabolism, enhance skin, scalp, and wound quality, promote cell turnover and protect normal skin and scalp. For example, it regulates the renewal and differentiation of the keratinocytes, so as to have an anti-aging activity.

7. Be very safe. Although high concentration or purified extract is applied topically to skin, it does not damage normal skin.

8. Have a longer and more stable activity. Although the extract contains many enzymes and hormones, their activities are more stable and can last more than one year even at room temperature.

Summary

Briefly, the present invention pertains to discovering a new, powerful, multi-function cosmetic or pharmaceutical composition for topical application to the skin or wound, and to a method of making this composition.

Description of Invention

Many animal pancreases and solvents (hydrosoluble and liposoluble) can be used to prepare the extract of animal pancreas, but preferably, I use swine pancreas, alcohol, and water to do it. Preferably the concentration of alcohol is higher than 60%, more preferably use 95% alcohol or much higher concentration.

Fresh or deepfrozen animal pancreases are ground or chopped up and suspended, while stirring, in double volume of 95% alcohol. The mixture is extracted for about several hours to 24 hours, then the mixture is centrifuged for a short time at about 5,000 rpm. Collect supernatant, and do not contaminate solid substance. Although the supernatant can topically be applied to the skin for skin care purposes after diluted by a dilutant, it is irritant to skin because it comprises too much alcohol. In order to decrease irritation to the skin or wound of alcohol in the extract of animal pancreas, above supernatant is concentrated by using vacuum pump or simply by blowing air into the supernatant to evaporate alcohol, but is not dried because dried extract is difficult to be completely dissolved again. Preferably, the supernatant is concentrated to about one-fourth of volume. For

example, 10 ml of the supernatant is concentrated to about 2.5 ml by evaporating alcohol. This concentrated supernatant is an extract of animal pancreas. It is a yellow liquid including a water phase and an oil phase; its pH value is between 6 and 7.

Example

50 g of swine pancreas is ground and suspended, while stirring, in 100 ml of 95% alcohol. The mixture is extracted at room temperature for about 12 hours, then is centrifuged for 10 minutes at 5,000 rpm. Transfer supernatant into a fresh container, and do not contaminate any solid substances. About 90 ml of the supernatant can be collected. Vacuum 90 ml of supernatant until the volume is decreased to about 22 ml. Now the extract of animal pancreas is gained.

Finally, the extract of animal pancreas is formulated with cosmetically or pharmaceutically acceptable ingredients into a variety of emulsions or solutions to satisfy some cosmetic or pharmaceutical needs. Preferably, the composition comprises about 1 to 13% more preferably 1 to 3% by weight of the extract of animal pancreas.

Examples

The Solution for Normal Skin	% w/w
Extract of animal pancreases	2.0
Cetareth-20	0.2
Methylparaben	0.2
Perfume	qs
Water	to 100

Daytime Protective Emulsion

Deionized water	76.9
Carbomer	0.2
Disodium EDTA	0.1
Methylparaben	0.2
Octyl methoxycinnamate	7.5

Cyclomethicone	5.0
Benzophenone-3	3.0
Stearic Acid	2.0
Phenotrimethicone	1.0
Tocopheryl acetate	1.0
Glyceryl Stearate	0.5
Cetyl alcohol	0.2
Propylparaben	0.1
Iron oxides	0.002
Sodium hydroxide (10 N)	0.3
Extract of animal pancreas	2.0
Perfume	qs

The extract of pancreas can also directly and topically be applied to skin or scalp without dilution and without formulating with other cosmetic and pharmaceutical ingredients. It can even be used at concentrated condition without damage to skin and scalp. However, the alcohol in the extract is irritant to wound of skin and scalp. In addition, the water phase and oil phase of the extract can separately be used, or separately used as a cosmetic and pharmaceutical composition to be formulated with other ingredients into varied products of cosmetic or pharmaceutical. However, the function is not as broad as the whole extract. For example, water phase has more function of peeling and cleansing, oil phase has more function of moisturizing, healing wound, improving metabolism, and emollient. Further, the extract can be heated to inactivate some active compositions sensitive to temperature, and to keep some compositions insensitive to temperature for particular use. For example, the function of silky smooth feeling and peeling is kept by means of heating the extract, because the composition of providing these functions in the extract is insensitive to temperature. In addition, in order to have a more specific function, the extract can further be processed by adjusting pH, salting-out, dialyzing, crystallizing, chromatographing, or electrophoresis etc. to eliminate some unwanted compositions. For example, the decrease of pH value will lead to precipitation of some compositions and decrease of peeling function, and the increase of pH value will lead to decrease of reparative function. The pancreatin separated by means of above methods can safely and self-limited peel stratum corneum without damage to normal tissue cells. Further purified trypsin and chymotrypsin can also be used to peel stratum corneum. The pancreatin, trypsin and chymotrypsin can be used to treat many keratoses such as ichthyosis, psoriasis, seborrheic keratoses, acne, dandruff, callous skin, etc.

The extract of animal pancreas comprises many active compositions such as insulin, glucagon, somatostatin, pancreatic polypeptide, kallikrein, elastase, pancreatin, fat, bile, and some unknown active compositions. Some of them are mutually antagonistic and some cooperative in function. By means of the experiments, it has been proved that the extract of animal pancreas is very beneficial to skin, scalp and wound and it does not damage normal tissue cells. Therefore, it is a very good and very useful cosmetic and pharmaceutical composition. However, the mechanism of effect, especially combined effect of varied compositions in the extract, is difficult to foretell, because the crude extract of animal pancreas includes many active composition, some of them have been known and some not. For example, its function of improving cell metabolism, promoting cell turnover, enhancing skin, scalp and wound quality, and moisturizing skin can not be foretold, because the pancreatin of the extract can digest skin tissue structure. The structure is destroyed; the functions beneficial to tissue cells can not be established. Therefore, the effect mechanism of animal pancreas extract can probably be inferred only by the result of experiments and practices.

The following is the possible interpretations of some effect mechanisms of the extract.

The insulin is an anabolic hormone, and therefore it provides a function of accelerating wound healing and a function of enhancing the quality of skin or scalp cells for the extract of animal pancreas. The kallikrein is a vasodilator which improves cell mitosis, wound healing and oxygen uptake, and protects from UV radiation (Natalia Michalun et al.), and therefore it provides a function of accelerating wound healing and a function of enhancing the quality of skin or scalp cells for the extract of animal pancreas. The pancreatin contains several enzymes such as amylases, lipases, nucleases, peptidases, trypsins, chymotrypsins, etc. which give it proteolytic, amylolytic and lipolytic activity (Natalia Michalun et al.), and therefore it provides a function of exfoliating cells from corneum layer and a function of skin cleansing for the extract of animal pancreas. The fat and some other substances provide a moisturizing function for the extract of animal pancreas.

In addition, the extract of animal pancreas also comprises some very important active compositions which have not been understood yet. Some of them provide a very powerful function of long-lasting moisturizing, some of them provide a very powerful function of making skin a long-lasting comfortable silky smooth feel, some of them provide a function of skin cleansing in combination with pancreatin, and some of them provide a function of accelerating wound healing in combination with kallikrein and insulin for the extract of animal pancreas. The compositions relative to moisturizing and silky smooth feel is stable in a wide range of pH value, and is serviceable to high temperature.

By means of above compositions, the extract of animal pancreas has a very powerful function of long-lasting moisturizing, a very powerful function of making skin a long-lasting silky smooth feel, a powerful function of accelerating wound healing, a function of exfoliating corneum layer, a cleansing function, and a function of enhancing quality of skin or scalp cells, etc. Therefore, it can be used as a powerful, multi-function, cosmetic or pharmaceutical composition to formulate with cosmetically or pharmaceutically acceptable ingredients into emulsions or solutions to satisfy some cosmetic or pharmaceutical needs and provide much broader functions.

Operation of Invention

The composition according to the invention is intended primarily as the products for topical application to human skin or wound, for protecting normal skin from dry, restoring the skin to a healthy, hydrated, supple and soft condition, treating dry skin, alleviating dandruff, accelerating wound healing, making skin a comfortable silky smooth feel, cleansing skin, and enhancing the quality of skin and scalp cells, etc.

In use, a small quantity of the composition, for example from 0.5 to 5 ml, is applied to area of the skin, scalp, or wound, it is then spread over and/or rubbed into the skin, scalp, or wound using the hand, fingers or a suitable device.

Conclusion, Ramifications and Scope

Accordingly, the reader will see that the extract of the present invention is an excellently multi-function cosmetic or pharmaceutical composition. It can be used to protect normal skin from dry, restore the skin to a healthy, hydrated, supple and soft condition, treat dry skin, alleviate dandruff, provide a very comfortable silky smooth feel for the skin, cleanse skin, accelerate wound healing, enhance the quality of skin and scalp cells, etc. It can also be used in combination with many cosmetically or pharmaceutically acceptable ingredients to provide much broader functions. Furthermore, it has the additional advantages in that

- . it provides the longest effect of moisturization on skin;
- . it keeps skin in naturally health feel and look;
- . it offers users a comfortable long-lasting silky smooth skin feel;
- . it has an effect of cleansing on skin;
- . it has an effect of exfoliating the cells from corneum layer;

- . it has an excellent effect on enhancing wound healing.
- . it has an effect of enhancing the quality of skin or scalp cells; and
- . it provides multi-function protective effects on skin, therefore, saves time and money, and convenience users.

Although the description above contains many specificities, these should not be construed as limitations on the scope of the invention, but rather as an exemplification of one preferred embodiment thereof. Many other variations are possible. For example, its effect on wound healing can also be used for other wounds, such as burn wounds, for tissue or organ grafting, etc.; while is used to enhance wound healing, it also has the effect on wound debridement because it contains the pancreatin; and it can also is formulated in about 70% alcohol to create a sterilizer which comprises about 10 to 13% of the extract of animal pancreas, this sterilizer sterilizes skin as well as protects skin from the side effect of alcohol on degrading the protective fatty acid mantle of skin, etc.

Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.

Claims: I claim:

1. A method of preparing a crude extract of animal pancreas, whereby said crude extract will be used as a cosmetic or pharmaceutical composition, comprising the steps of:
 - (a) Suspending minced animal pancreas, irrespective of the kinds of animals, in solvents,
 - (b) Extracting the mixture for several to 24 hours or more, and
 - (c) Collecting supernatant, whereby said crude extract of animal pancreas will be obtained.
2. The method of claim 1 wherein said animal pancreas is swine pancreas.
3. The method of claim 1 wherein said solvents comprise both liposoluble and hydrosoluble solvents.
4. The method of claim 3 wherein said liposoluble solvents are alcohol, and said hydrosoluble solvents are alcohol and water.
5. A composition for topical application to skin, scalp, or wound which treats dry, chapped or cracked skin, protects normal skin, makes skin to have a silky smooth feel, accelerates wound healing, peels the cells from stratum corneum, treats keratoses, cleanses skin, improves tissue cell metabolism, promotes cell turnover, or enhances the quality of skin, scalp or wound, comprising a crude extract of animal pancreas.
6. The composition of claim 5 wherein said composition for topical application to skin or scalp which treats or prevents normal, dry, chapped or cracked skin comprises at least one component of said crude extract.
7. The composition of claim 5 wherein said composition for topical application to skin which makes skin to have a silky smooth feeling comprises at least one component of said crude extract.
8. The composition of claim 5 wherein said composition for topical application to wound which accelerates wound healing comprises at least one component of said crude extract.
9. The composition of claim 5 wherein said composition for topical application to skin, scalp

or wound which improves tissue cell metabolism, promotes cell turnover, or enhances the quality of skin, scalp or wound comprises at least one component of said crude extract.

10. The composition of claim 5 wherein said composition for topical application to skin, scalp or wound which cleanses skin, scalp or wound comprises at least one component of said crude extract.

11. The composition of claim 5 wherein said composition for topical application to skin or scalp which peels the cells of stratum corneum or treats keratoses comprises at least one component of said crude extract.

12. The composition of claim 5 wherein said composition for topical application to skin or scalp which peels the cells of stratum corneum or treats keratoses comprises trypsin or chymotrypsin of said crude extract.

13. A method of protecting normal skin, making skin to have a silky smooth feeling, treating dry, chapped or cracked skin, accelerating wound healing, peeling the cells of stratum corneum, treating keratoses, cleansing skin, improving tissue cell metabolism, promoting cell turnover, or enhancing the quality of skin or scalp comprising a crude extract of animal pancreas.

14. The method of claim 13 wherein said method further includes using cosmetically or pharmaceutically acceptable ingredients to formulate a product of cosmetic or pharmaceutical comprising at least one or full components of said crude extract.

15. The method of claim 13 wherein said method of protecting or treating normal, dry, chapped or cracked skin includes the topical application to the skin or scalp of a composition comprising at least one component of said crude extract.

16. The method of claim 13 wherein said method of accelerating wound healing includes the topical application to the wound of a composition comprising at least one component of said crude extract.

17. The method of claim 13 wherein said method of peeling cells of stratum corneum or treating keratoses includes the topical application to the skin or scalp of a compositions comprising at least one component of said crude extract.

18. The method of claim 13 wherein said method of making skin to have a silky smooth feeling includes the topical application to the skin of a composition comprising at least one component of said crude extract.

19. The method of claim 13 wherein said method of improving tissue cell metabolism, promoting cell turnover or enhancing skin, scalp, or wound quality includes the topical application to the skin, scalp or wound of a composition comprising at least one component of said crude extract.

20. The method of claim 13 wherein said method of safely peeling cells of stratum corneum or treating keratoses includes the topical application to the skin or scalp of a composition comprising pancreatin of said crude extract.

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :A61K 7/00

US CL :424/401

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 424/401

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
APS, WPIDS, JAPIO, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,071,410 A (YOSHIZAWA) 31 January 1978, col. 1 lines 53-58; col. 2 lines 35-58.	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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